RHIC QLI – Power Supply / Diagnostic Reports for (p^ Run 2001 - 2002)
January-14 thru January-20

Monday: Jan 14, 2002:

Monday: Jan 14, 2002: Beam Abort, QLI in Blue ring, 9b-ps1 (Actual Time: 14:16:36 +3426335)
QPA Faults: N/A
QD Alarms: (9b-qd1) B8DSA4_A3VT, Tq -24 (all others fired indicating positive Tq's)
DX Heaters: None fired.
QdRealQuench: 17 detectors tripped, none indicating data.
Postmortems: N/A
Qdplots: Ramping to Injection current but the ramp continues past Injection.
Beam Loss Monitors: N/A
Quench Status: Not real.
Reason: Not a standard ramp, MCR tried to ramp to store current from park.

Monday: Jan 14, 2002: QLI in Yellow ring, 9b-ps1 (Actual Time: 14:19:44 +2460545)
QPA Faults: N/A
QD Alarms: (9b-qd1 Y8DSA4_A3VT Tq -24, (7b-qd1) Y6DSA4_A3VT Tq-12, (5b-qd1) Y4DSA4_A3VT Tq-23, all others fired indicating positive values.
DX Heaters: None fired.
QdRealQuench: 6 detectors tripped, none indicating data.
Postmortems: N/A
Qdplots: YDMC = 1331.729amps.
Beam Loss Monitors: N/A
Quench Status: Not real.
Reason: Not a standard ramp, MCR tried to ramp to store current from park.

From the Physics Logs: The blue and yellow quench links were inadvertently pulled due to a malapropos ramp being loaded. 14:28:14 comment by...Johannes -- Forgot to load in the spin2 ramp, hence we went to 'injection' for down2 ramp which is flattop currents...

16:58:39- RHIC acceleration ramp started, ramp id spin2_1011045022 Sequencer

Monday: Jan 14, 2002: Beam Abort,{Loss Monitor 1}, QLI in Blue Ring, 8b-ps1, (Actual Time: 17:01:00 +3005604)
QPA Faults: QP11-R8BD2-b8-dhx-qp (CROWBAR)
QD Alarms: (8b-qd1) B7QFQ2_VT Tq-24, all others indicate positive Tq values.
DX Heaters: None fired.
QdRealQuench: 12 detectors fired, only (8b-qd1) B7QFQ2_VT indicated real.
Postmortems: bo7-qf2-ps shows current begins to drop approx. -0.28sec before T=0.
Qdplots: Ramping to top energy, BDMC = 1952.37amps and BQMC = 1842.00amps makes it to the top at -7.138sec. (V-tap B7QFQ2_VT goes negative -0.29sec).
Beam Loss Monitors: Sector 8 levels indicate below 200rads/hr while in Sector 7, higher losses occur around g7-lm1=2391rads/hr and g7-mlmx.2=953rads/hr
Quench Status: REAL QUENCH
Reason: Beam induced.

From the Physics Logs: 1701 -- During a RHIC ramp, a blue quench occurred before reaching flattop due to beam loss. 17:24:51 comment by...jak -- The real quench PET page indicated a real quench. Cryo also saw an increase in temp.

Tech Notes: The Permit Link went down first at (17:10:00 +2.729usec.) Added from George's notes that they just ended the ramp 7.1sec before the quench.

Tuesday: Jan 15, 2002:

Comments from the Physics Logs : (For Information Only)

06:15:03- 3c-ps1 went down, taking the permit link with it, a reset did not revive the FEC. Attempting an AC reset. After speaking with T. Clifford and E. Koropsak, support is going to go into the ring to swap out the power supply chassis for the FEC. Unable to turn the FEC chassis on after replacing the power supply. Experts from the controls group found a loose cable connection from V113 to V114. FEC chassis is back on.

Tuesday: Jan 15, 2002: Beam Abort, QLI in Blue Ring, 12a-ps1.A (Actual Time: 09:44:08 +3314722)
QPA Faults: Blue IR power supplies off, indicating no faults.
QD Alarms: (12a-qd1) B12QFQ1_VT Tq-24, all others tripped indicating positive values.
DX Heaters: None fired.
QdRealQuench: 12 detectors fired, no indications.
Postmortems: (bi12-qf3-ps) Iref, current, voltage and error all dropped -0.02sec before T=0.
Qdplots: BQMC=448.14, BDMC=473.44 sitting at Injection current.
Beam Loss Monitors: N/A
Quench Status: Not real.
Reason: **Buffer Card failure**, +16v loaded down.

Tech Notes: The two following QLI's occurred when MCR tried to recover using the Quench Recovery Script. All relating to the same problem with the BUFFER CARD in power supply bi12-qf3.

Beam Abort, QLI in Blue Ring, 12a-ps1.A (Actual Time: 09:58:52 +1114918) dropped first Sequencer
QD Alarms: (12a-qd1) B12QF1_VT, Tq-24, no other detector trips.

Beam Abort, QLI in Blue Ring, 12a-ps1.A (Actual Time: 10:09:00 +2598130) dropped first Sequencer
QD Alarms: (12a-qd1) B12QF1_VT, Tq-24, no other detector trips.
BI12-QF3-PS at -373amps on the QD pet page.

Problem was later fixed back at the shop when Jim O. discovered a **shorted capacitor (C118)** a bypass cap that loaded down the +15v2 regulator which in turn loaded down the +16v power regulator.

Tuesday: Jan 15, 2002: Beam Abort, QLI in Blue Ring, 10a-ps3.A (Actual Time: 10:59:52 +1496531)
QPA Faults: Blue IR's off, no faults indicated.
QD Alarms: None fired, still in "Running Mode".
DX Heaters: None fired.
QdRealQuench: None listed, still in "Running Mode".
Postmortems: bi9-qf7-ps, while ramping up, the current did not follow the Iref.
Qdplots: N/A
Beam Loss Monitors: N/A
Quench Status: Not real.
Reason: **Current regulator card failed.**

Tech Notes: Current regulator card was replaced. Back at the shop, Jim O. found that there was a 1/2 volt offset with the voltage setpoint with no input and that the K2 relay was slightly intermitting. The K2 relay was replaced and the offset appeared to be due to poor contacts between the time constant board and the main board.

Other Comments from the Physics Logs : (For Information Only)

1420 -- The blue lifetime suffers when PHOBOS ramps up their magnet.
1503 -- The store was aborted when the 10a-blm2 and 12a-blm1 loss monitor boards pulled the permit link.

Tuesday: Jan 15, 2002: Beam Abort, QLI in Blue Ring, 7b-ps1 (Actual Time: 17:31:16 +3202910)
QPA Faults: N/A
QD Alarms: 12 detectors tripped with all indicating positive Tq values.
DX Heaters: None fired.
QdRealQuench: 18 of the 20 detectors indicate that they tripped but show no data.
Postmortems: Blue power supply mains looked okay.
Qdplots: BDMC=473.44amps, BQMC=448.15amps sitting at Injection current.
Beam Loss Monitors: Sector 7 okay, Sector 8 showed that two BLM's had spiked above 50 rads/hr (g8-lm7=51.25 & g8-lm5=51.45). Sector 9 & 10 beam dumps appeared to be normal, however sector 10 showed higher levels.
Quench Status: Not real.
Reason: Permit failure, see Tech Notes below.

Tuesday: Jan 15, 2002: QLI in Yellow Ring, 7b-ps1 (Actual Time: 17:31:16 +3202912)
QPA Faults: N/A
QD Alarms: 6 detectors indicate positive Tq values while the other 6 detectors still dumping data but never finished.
DX Heaters: None fired.
QdRealQuench: 18 of the 20 detectors indicate that they tripped but show no data.
Postmortems: Yellow power supply mains looked okay.
Qdplots: YQMC=449.91amps, YDMC=473.75amps sitting at Injection current.
Beam Loss Monitors: (same as above)
Quench Status: Not real.
Reason: Permit failure, see Tech Notes below.

Tech Notes: This problem has occurred in the past with the Quench Detector Chassis. The Permit Module had been replaced but upon further investigation, it may be that the V102 interface card may be the problem. During the next maintenance period, if time permits, this will be the next step and changed.

Wednesday, January 16, 2002:

Beam Studies for most of the day:

0550: Beam aborted to prepare for beam studies.
0600: BLIP off. Beam studies begin and will last until 1400hrs.

Comments from the Physics Logs :

After the RHIC studies ended this shift, a fugacious store was established. The store was aborted due to a cryogenic beam permit interlock. Two yellow snakes quenched shortly after the beam permit was cleared due to tripped correctors in 11 o'clock. This was followed by two (2) yellow QLI's. A buffer card was replaced for the y2-q7 supply and the quench link was recovered.

15:48:22- Beam Abort, 12a-ps1.B dropped {Cryo Lead Flow} Sequencer
1548 -- The beam was aborted when a cryo interlock pulled the beam permit.
1605 -- The CCR reported that they had intermittently lost communication with a rack that controls the lead flows.

Permit.9c-ps1 Snake Link Failure (Time: 16:10:28 +3333748)
Wednesday, January 16, 2002:

Yellow Snake yo9-snk7-2.3-ps (Snapshot Data Time: 16:10:31)
Snap Shot: (Stby-Error), The current dropped before Iref, voltage rises.
Current Settings: BMDC = 473.45amps, sitting at Injection. Snake Magnet Current = 327.13amps
Qdplots V-tap: YO9SNK7_3VT goes negative approximately -0.33sec before T=0.
Beam Loss Monitors: N/A, data not available.
Quench Status: REAL MAGNET QUENCH
Reason: Beam induced

Yellow Snake yo9-snk7-1.4-ps (Snapshot Data Time: 16:10:33)
Snap Shot: Current began to drop before Iref but then Iref dropped followed by current.
Current Settings: Snake Magnet Current = 99.98amps.
Qdplots V-tap: Perturbation takes place -2.14seconds before T=0.
Quench Status: REAL MAGNET QUENCH
Reason: Caused by y09-snk7-2.3 quench.

From the Physics Logs: -- comment by...jak -- Well... finally the reason for the snake quench! When the beam was aborted by the cryo interlock, the correctors had tripped off on a lead flow fault in the 11 o'clock alcoves. However, the alarm display at MCR5 (the RHIC console) was not updating and did not display this information. Hence, beam was injected with the correctors off. The alarm display above shows that the 59 lead flow faults (the others were cleared) occurred at the time that cryo pulled the permit.
-- Wed Jan 16 18:32:37 comment by...jak -- Well, after looking more closely at the alarm display at MCR5, I see that someone changed the filter on the alarm dispaly! Someone had placed the cryo filter on the RHIC alarm display, thus we were not seeing any alarms for the correctors and sextupoles that had tripped.

Wednesday: Jan 16, 2002: QLI in Yellow ring, 2b-ps1 (Actual Time: 18:22:28 +356915)
QPA Faults: Yellow IR power supplies off, no faults.
QD Alarms: (2b-qd2) Y1QFQ7_VT, Tq-25. Only quench detector to fire.
DX Heaters: None fired.
QdRealQuench: Only 2b-qd2 fired but with no indications.
Postmortems: Y2-q7-ps after T=0, indicates that everything stays negative.
Qdplots: Appeared to be ramping to Park, once YDMC and YQMC = 50amps, y2-q7-ps (raw) indicated that it dropped off at -0.05sec before T=0.
Beam Loss Monitors: No data available.
Quench Status: Not real.
Reason: Buffer card Failed on y2-q7-ps.

Wednesday: Jan 16, 2002: QLI in Yellow ring, 2b-ps1 (Actual Time: 18:47:44 +1779372)
QPA Faults: Yellow IR power supplies off, no faults.
QD Alarms: (2b-qd2) Y1QFQ6_4VT, Tq-25. Only quench detector to fire.
DX Heaters: None fired.
QdRealQuench: Only 2b-qd2 fired but with no indications.
Postmortems: Indicate y2-q7-ps all signals pulled to the maximum negative rail.
Qdplots: Recovery script failed, Mains at zero current, y2-q7-ps (raw) indicates -749amps.
Beam Loss Monitors: No data available.
Quench Status: Not real.
Reason: Buffer card Failed on y2-q7-ps.

From the Physics Logs: -- 19:56:29- After speaking with Don Bruno, we determine that the **buffer card for y2-q7** supply was indicating a negative read back and was pulling the yellow quench link. Support replaced the buffer card. jak

Tech Notes: Jim found that the bypass capacitor (C112) was shorted, causing the +18v2 input to be loaded down.

Thursday, January 17, 2002:

Thursday, January 17, 2002: QLI in Yellow ring, 10a-ps3.A (Actual Time: 10:10:44 +3321836)
QPA Faults: Yellow IR power supplies off, no faults.
QD Alarms: All tripped indicating positive Tq values.
DX Heaters: None fired.
QdRealQuench: 12 detectors fired but no indications listed.
Postmortems: Found nothing unusual.
Qdplots: YDMC = 1952.36amps, YQMC = 1840.79amps, sitting at top energy.
Beam Loss Monitors: Sector 9, g9-lm5 seemed rather high, but it appeared to be a clean beam dump.
Quench Status: Not real.
Reason: Unexplained at the moment, MCR was able to reset.

From the Physics Logs: This was the only entry following: (10:18:37- Modified down2:g90 quad strengths based on last time's PLL data. johannes)

Friday, January 18, 2002:

Deceleration Ramp: (in preparation for brief maintenance period)

11:34:22- RHIC acceleration ramp started, ramp id down2_1011370462 Sequencer
11:34:53- Beam Abort, 6b-ps1 dropped {PASS Division B} Sequencer

Friday, January 18, 2002: QLI in Yellow ring, 3b-ps1 (Actual Time: 11:36:36 +3501322)
QPA Faults: N/A.
QD Alarms: (3b-qd1) Y2DSA4_A3VT, Tq-24 Three units never finished dumping data, all others tripped indicating positive Tq values.
DX Heaters: None fired.
QdRealQuench: 18 of 20 detectors fired, no indications.
Postmortems: N/A
Qdplots: Deceleration Ramp, voltage tap goes from positive to negative before T=0. There seems to be two perturbation occurrences on the v-tap at -13.76 and -1.8 like seen on the Snake Quenches.
Beam Loss Monitors: Sector 2 indicates several higher then normal losses.
Quench Status: REAL QUENCH
Reason: Beam induced.

Friday, January 18, 2002: QLI in Blue ring, 3b-ps1 (Actual Time: 11:36:36 +3784257)
QPA Faults: N/A
QD Alarms: (3b-qd1) B3DSA3_A2VT, Tq-24 (all others fired indicating positive values).
DX Heaters: None fired.
QdRealQuench: 18 of 20 detectors fired, no indications.
Postmortems: N/A
Qdplots: Deceleration Ramp, voltage tap goes from positive to negative before T=0. There seems to be a perturbation occurrence on the v-tap at -14.60 like seen on the Snake Quenches.
Beam Loss Monitors: Sector 2 indicates several higher then normal losses.
Quench Status: REAL QUENCH
Reason: Beam induced.

From the Physics Logs: The Deceleration Ramp was unsuccessful. A loss monitor permit was pulled.

Tech Notes: George notes that during the down ramp, the setpoints on all magnets went past injection to 232amps and the went up to injection. This is not a standard ramp.

Recovering from a One (1) Hour Maintenance:

Friday, January 18, 2002: QLI in Blue ring, 12a-ps1.A (Actual Time: 12:54:40 +2507066)
QPA Faults: Blue IR power supplies off, no faults.
QD Alarms: None, Running Mode.
DX Heaters: None fired.
QdRealQuench: N/A
Postmortems: Nothing unusual.
Qdplots: N/A
Beam Loss Monitors: N/A
Quench Status: Not real
Reason: Unexplained, occurred during the recovery script while bringing the Blue and Yellow Links up.

Tech Notes: This has occurred before as an unexplained problem, found nothing wrong at the time so we re-ran the recovery program a second time and it worked.

Saturday, January 19, 2002:

No reported QLI or Power Supply problems, Science continues!

Sunday, January 20, 2002:

Sequence of Events for yi3-snk7-1.4 and yi3-snk7-2.3 Quench.
01:10 Blue and Yellow 3 o'clock snakes quenched. CCR does not see anything unusual.
02:10 Snakes are on. Performing a hysteresis ramp. BLIP is off.
02:15 CCR informs us that they have detected a heat wave, and tells us to leave the magnets at park for at least 30 min.
02:55 CCR gives the ok to ramp to injection.
03:00 Performing a hysteresis ramp.
03:20 Injecting beam.

Permit.3c-ps1 Snake Link Failure (Time: 01:13:16 +1046994)

Sunday, January 20, 2002:

Yellow Snake yi3-snk7-1.4-ps (ReadAlarmLog Data Time: 01:14:41)
Snap Shot: (System did not take Data at the time of QLI)
Snake Magnet Current = 100amps
Qdplots V-tap: N/A
Beam Loss Monitors: N/A
Quench Status: Not Real.
Reason: Power Supply tripped to OFF condition.

Yellow Snake yi3-snk7-2.3-ps (ReadAlarmLog Data Time: 01:48:03)
Snap Shot: (System did not take Data at the time of QLI)
Current Settings: YMDC = 473.45amps, sitting at Injection. Snake Magnet Current = 325.26amps.
Qdplots: Indicate YI3SNK7R2 GL Int1 quenched.
Quench Status: REAL MAGNET QUENCH.
Reason: Most likely due to yi3-snk7-1.4 tripping off, causing a heat wave to travel through.

Tech Notes: 02:15 Cryogenics detected a heat wave, and told MCR to put the magnets at park for at least 30 min.

From the Physics Logs: Two RHIC stores were established for physics during this shift. The first store was dumped due to a snake quench. Another store was dumped because of low polarization in Blue. As of end of the shift, RHIC beams were stored for physics. Planned deceleration ramps were not exercised during this shift.